

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Petition of Aviation Spectrum Resources, Inc.)	RM No. _____
for Amendment of Sections 87.173(b) and)	
87.263(a) of the FCC's Rules to Allow Use of)	
the Lower 136 MHz Band by Aeronautical)	
Enroute Stations)	

PETITION FOR RULEMAKING

Aviation Spectrum Resources, Inc. (“ASRI”) hereby petitions the Federal Communications Commission (“FCC” or “Commission”) for Amendment of Sections 87.173(b) and 87.263(a) of the Commission’s rules to allow use of the band 136.000 - 136.4875 MHz (the “lower 136 MHz band”) for Aeronautical Enroute Services (“AES”) to support both the industry’s aeronautical operational control and Federal Aviation Administration’s (“FAA”) air traffic control communications using FCC-licensed aeronautical enroute stations.¹ This rule change will facilitate the expansion of the FAA’s Data Communications (“DataComm”) program in support of its Next Generation (“NextGen”) initiative to modernize the nation's air transportation system.²

DataComm will operate on existing aviation industry digital VHF networks under contract to the FAA through Harris Corporation. The system will use VHF Datalink Mode 2 (“VDLM2”), an advanced digital protocol for aeronautical safety communications traffic to be

¹ The proposed revised regulations are set forth in Appendix A to this petition.

² See FAA NextGen Website, https://www.faa.gov/nextgen/what_is_nextgen/

sent and received in a single avionics package. As discussed below, grant of the requested rule change will ensure that adequate spectrum is available for the growth of essential aviation communications services, thereby enhancing aviation safety. In addition, grant of the modification will comport with the Table of Frequency Allocations, be consistent with the Commission's original intentions for the lower 136 MHz band, and promote the Commission's policy objectives with respect to the efficient use of spectrum.

ASRI is the communications company of the U.S. air transport industry and is owned by U.S. airlines and other airspace users. It is the principal licensee for U.S. Aeronautical Enroute Service ("AES") frequencies and the sponsor of the Aeronautical Frequency Committee ("AFC"). This enables ASRI to draw on expertise and opinions from across the U.S. aviation community to promote the safe and efficient operation of commercial aviation radio communications systems within the U.S. By coordinating with the AFC, ASRI also supports the safe operation of U.S. aviation in an international environment through participation with the International Civil Aviation Organization ("ICAO"), the International Air Transport Association ("IATA"), and International Telecommunication Union Radiocommunications Sector ("ITU-R").

DataComm transmissions use the Aeronautical Enroute Service ground stations licensed to ASRI and operated by ARINC/Rockwell Collins and SITAONAIR. The program has earned the support of the nation's major air transport operators including airlines and freight carriers and is already being successfully deployed in the 136.500-136.975 MHz band. The joint industry and Federal plans for the implementation of the DataComm Program include a VHF frequency plan and traffic sharing procedures developed by the aviation industry, and subsequently adopted by the DataComm program.

I. IMPLEMENTATION OF VDLM2 IN THE 136 MHZ BAND IS ESSENTIAL FOR MEETING GROWING AERONAUTICAL COMMUNICATIONS NEEDS.

Aeronautical operational control (“AOC”) and air traffic control (“ATC”) communications work in tandem to support the exemplary safety record of the aviation industry. AOC communications are those that pertain to “the safe, efficient and economical operation of aircraft, such as fuel, weather, position reports, aircraft performance, and essential services and supplies.”³ Datalink communications are transmitted by aeronautical enroute stations (“AES”). ASRI holds all AES licenses in Hawaii, the conterminous United States, and its possessions, which enable AOC communications by passenger airlines and cargo carriers through networks operated primarily by ARINC/Rockwell Collins and Société Internationale de Télécommunications Aéronautiques (“SITA or “SITAONAIR”).⁴ With the growth of data centric applications and automation within the aviation industry, datalinks have increasingly augmented existing voice networks for those applications best suited to such a medium. Concurrent usage of both data and voice communications types has improved safety, efficiency and enabled more effective use of the AES VHF spectrum.

ATC communications relate to the use of the national airspace by aircraft, and include navigation information, aircraft positional reporting, departure clearances, oceanic clearances, runway conditions, and weather data. Currently, ATC communications are transmitted through U.S. government VHF air traffic service ground stations operated by the FAA using voice transmissions. The FAA is now implementing the NextGen program, which will modernize and transform the national airspace system into a flexible, scalable, and time-based management

³ 47 C.F.R. § 87.261(a).

⁴ Domestic only stations in Alaska are licensed to Alaska Aviation Radio, Inc., as noted in 47 C.F.R. § 87.261(c). ASRI also holds the licenses for AES stations in Alaska.

system. One component of the NextGen program is DataComm, which uses digital messaging to augment ATC voice communications in certain phases of flight, with voice available upon request in exigent circumstances. The overall operation of the DataComm Program and the efforts to date are depicted in Appendix B to this petition. This information shows the great gains in operational efficiency and reduced flight delays achieved by the relatively modest use of DataComm operations on the ground at a few airports. Implementation of DataComm in support of air traffic aloft will greatly expand these efficiencies and benefits.

To meet the growing need for digital bandwidth aviation communications, the aviation industry developed VHF Data Link Mode 2 (“VDLM2”), a bit-oriented, air/ground and ground/ground data link technology capable of transmission rates that are more than ten times faster than predecessor technology.⁵ Networks using VDLM2 combine all aviation messages into a single channel, allowing aircraft to receive and transmit communications from aeronautical enroute stations using a single avionics terminal aboard the aircraft. Existing international aviation standards ensure the network traffic is managed and time critical messages such as ATC messages for aircraft in flight are given a suitable priority amongst the different traffic types. With DataComm the industry and the FAA have collaborated to exploit these existing capabilities to the benefit of aviation and the flying public.

The ability to use VDLM2 in the entire 136-137 MHz band is essential to accommodate the growing spectrum bandwidth needs of the aviation industry and ensure the safe operation and navigation of our nation’s aircraft. Initially, DataComm is being implemented using AES

⁵ VDLM2 is a successor to ACARS (“Aircraft Communications Addressing and Reporting System”) introduced in 1978 and implemented on a widespread basis in the 1980s. ACARS was developed for AOC communications, but has also been applied to certain ATC communications in support of ground movement of aircraft such as departure control as the efficiency and safety of nonvoice communications has been demonstrated.

stations in the 136.4875 – 137.000 MHz band, and is providing benefits as seen in Appendix B. Spectrum in the 136.000 – 136.4875 MHz band will be needed as the use of DataComm expands and additional channels are required. Current predictions are that this expansion spectrum will be needed by the end of 2019.⁶ As it will take six months to procure, integrate and test new DataComm enroute stations, ASRI urges the Commission to move expeditiously in response to the requested rule changes.

II. TRANSMISSION OF BOTH AOC AND ATC COMMUNICATIONS IN THE ENTIRE 136 MHZ BAND IS CONSISTENT WITH THE COMMISSION’S INTENT FOR AND ALLOCATION OF THE BAND.

Use of the 136-137 MHz band for DataComm VDLM2 transmission of AOC and ATC is entirely consistent both with the Table of Frequency Allocations and the Commission’s stated intent for how the band should be used. In 1990, the FCC allocated the 136 – 137 MHz band to non-government Aeronautical Mobile (R) services, and adopted a band plan that allotted various frequencies within the band for specified communications.⁷ Accordingly, the twenty channels comprising the upper 136 MHz band (136.5-137 MHz) were made available for AES, while the twenty channels comprising the lower 136 MHz band were made available for uses such as automatic weather observation service (“AWOS”), automatic terminal information service (“ATIS”), and air-to-air corridor advisory and airport control tower communications.⁸

Reasoning that many of these services “may be provided by either Government (FAA) or non-

⁶ This is the earliest date based on current modelling predictions using existing VDLM2 traffic.

⁷ *Amendment of Parts 2 & 87 of Commission's Rules to Permit the Aviation Servs. to Use Frequencies in the 136-137 MHz Band.*, Report and Order, 5 FCC Rcd 3954, 3955, 3958 ¶¶ 10, 32 (1990) (“136-137 MHz Order”). This domestic allocation followed the 1979 World Administrative Radio Conference, which first allocated the 136-137 MHz band for “Aeronautical Mobile (R)” service on a primary basis to reserve global spectrum primarily for digital aeronautical VHF communications technologies. *Id.* at 3954 ¶ 2.

⁸ *Id.* at 3958 ¶ 32.

Government facilities at any given location,” the Commission also revised the Table of Frequency Allocations to provide that the 136-137 MHz band was allocated for non-government use on a primary basis, with channels in the lower 136 MHz band available to the FAA on a shared basis under footnote US244.⁹

In 2001, the Commission declined to reallocate the 136 MHz band to government use on a primary basis, reaffirming its intent that the band be used for both AOC and ATC communications. Specifically, the Commission stated that it must “accommodate digital communications in the 117.975-137 MHz band and allow the use of both VDL Mode 2 and VDL Mode 3 *throughout the band without limitation.*”¹⁰ The Commission further reiterated that it intended the 136 MHz band, specifically, to be used for both AOC and ATC communications, concluding that “maintaining the existing allocation will protect ARINC’s current use of the 136-137 MHz frequencies for aircraft operational control communications without having a negative impact on the FAA’s existing rights to use the lower channels on a shared basis for air traffic control purposes.”¹¹ The Commission also updated several Part 87 technical rules to enable the deployment of VDLM2 throughout the entire 136-137 MHz band.¹²

⁹ *Id.* at 3955 ¶ 7. Initially, the FAA was provided access to 15 channels in the lower 136 MHz band. Subsequently, the FCC provided FAA with access to 5 additional channels that were previously held in reserve. *Amendment of Parts 2 & 87 of Commission's Rules to Accommodate Advanced Digital Commc'ns in 117.975-137 MHz Band & to Implement Flight Info. Servs. in 136-137 MHz Band*, Report and Order, 16 FCC Rcd 8226, 8230 ¶ 8 (2001) (“*Second 136-137 MHz Order*”).

¹⁰ *Second 136-137 MHz Order* at 8232 ¶ 14 (emphasis added).

¹¹ *Id.* at 8230 ¶ 9.

¹² These changes included: (i) adding the emissions classes for phase modulation digital data transmission (G1D and G7D) to the list of authorized emissions in the 117.95-137 MHz, 47 C.F.R. § 87.131; (ii) establishing emission tolerances for G1D and G17, *id.* § 87.133; (iii) establishing authorized bandwidth for each G1D emission designator, *id.* § 87.137; and (iv) establishing emission limitations for VHF aeronautical and aircraft stations operating with G1D and G17 emissions *id.* § 87.139. *Second 136-137 MHz Order* at 8240-41 ¶¶ 4-7.

In a June 2018 interpretation provided at the request of the FAA, the Commission concluded “that the language of the relevant rules and the cited precedent support the view that the Part 87 rules permit aeronautical enroute stations to provide ATC as well as AOC communications in the 136.4875-137.000 MHz band.” Specifically, the Commission “granted the FAA’s request that we confirm that aeronautical enroute stations may transmit both AOC and ATC communications in the band, provided that priority is accorded to ATC communications.”¹³

III. SECTIONS 87.173(b) AND 87.263(a) OF THE COMMISSION’S RULES PREVENT AOC COMMUNICATIONS IN THE LOWER 136 MHZ BAND.

Notwithstanding the Commission’s clear intentions for the 136 MHz band, two FCC rules prevent fulfillment of those objectives: (1) Section 87.173(b), which provides that the lower 136 MHz band is to be used for “air traffic control communications,”¹⁴ and (2) Section 87.263(a), which provides a list of frequencies on which AES stations may be licensed and does not include the lower 136 MHz band.¹⁵ By imposing limitations on the use of the lower 136 MHz band that preclude transmission of AOC communications, these two provisions serve to prevent the implementation of DataComm’s VDLM2 operations in this band segment, thereby undermining the allocation of the band in the Table of Frequency Allocations and limiting the Commission’s stated intention for how the band should be used.

IV. GRANT OF THE REQUESTED AMENDMENT WOULD SERVE THE PUBLIC INTEREST.

First and foremost, grant of the requested change would serve the public interest by facilitating the deployment of advanced aeronautical communications systems, thereby

¹³ FAA Request Regarding Aeronautical Enroute Stations and Air Traffic Control, Order, DA 18-616, (Wireless Telecommunications Bur., rel. June 15, 2018).

¹⁴ 47 C.F.R. § 87.173(b).

¹⁵ *Id.* § 87.263(a).

enhancing aviation safety. Data communications provide for greater clarity. Messages transmitted by VDLM2 appear on a screen in the cockpit, can be printed, and can be transferred by the pilot or co-pilot into the aircraft's flight computer as needed. Thus, data communications can reduce the need for "read backs" of instructions and the acknowledgement or repeat of voice messages. By using one terminal for both ATC and AOC traffic, operations aboard the aircraft are simplified while also negating a need to retrofit all large commercial aircraft with additional radios.

As aeronautical communications have evolved, demand for bandwidth for data communications continues to increase. The DataComm program provides a ready means for leveraging industry networks in support of both ATC and AOC. Currently, the stakeholders in the DataComm program (i.e. the FAA, ASRI, air carriers, ARINC/ Rockwell Collins, and SITAONAIR) estimate that as the program matures about twenty percent of the traffic will be for ATC and about eighty percent will be for AOC. The FAA has determined that deploying Data Comm using the industry's aeronautical enroute stations is the way to meet these demands for ATC data communications. By authorizing AES use of the lower 136 MHz band, the Commission will enable VDLM2 operations to be deployed across the entire 136 MHz band, allowing the FAA to implement DataComm and allowing ASRI to meet the growing need for AES stations that will transmit both ATC and AOC communications. Further, because the VDLM2 networks are designed to prioritize ATC communications, use of the spectrum in this manner will enable next generation ATC communications while presenting no threat to the air traffic control system as such operations would be conditioned upon the FCC licensee and the FAA agreeing upon the frequencies to be used by the AES stations and the traffic sharing methodology to be employed. Additionally, the FAA's voice ground stations in support of ATC

will remain, thereby providing backup as needed in a manner that will allow for less congestion of FAA voice channels.

Grant of the requested amendment to allow implementation of data communications throughout the 136 MHz band also serves the public interest by fulfilling the Commission's policy objectives for this band segment and the use of spectrum more generally. Indeed, as discussed above, use of the lower 136 MHz band for AOC communications would comport with the Table of Frequency Allocations and satisfy the Commission's intentions that the entire band be available for nongovernment use. Moreover, because AES stations are currently precluded in the lower 136 MHz band, the band segment is being lightly used at this time. Thus, grant of the requested rule changes would also serve the public interest by fulfilling the Commission's well-established policy objective to "promote the efficient use of spectrum resources."¹⁶

¹⁶ *Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, & 101 to Establish Unif. License Renewal, Discontinuance of Operation, & Geographic Partitioning & Spectrum Disaggregation Rules & Policies for Certain Wireless Radio Servs.*, Second Report and Order and Further Notice of Proposed Rulemaking, 82 FR 41530, ¶ 5 (2017). *See also, e.g., Vermont Transco LLC*, Order, 26 FCC Rcd. 8820, 8822 ¶¶ 6-7 (2011) (granting a waiver of certain Part 80 rules to allow the operation of a private land mobile radio system on Automated Maritime Telecommunications System spectrum in part because the requested operations would "promote the efficient use of AMTS spectrum").

V. CONCLUSION

In light of the foregoing, ASRI respectfully requests that the Commission issue a notice of proposed rulemaking proposing to grant the rule changes requested herein to permit FCC-licensed aeronautical enroute stations to operate in the 136.000 – 136.4875 MHz band consistent with the proposed rule changes set forth in Appendix A to this petition.

Respectfully Submitted,

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Appendix A

Changes Required for CFR 47 Part 87 for DataComm operations in lower the 136 MHz Band

Proposed changes are shown in red. FAE is the symbol for the Aeronautical enroute station class as per §87.171.

§87.173 Frequencies.

(a) The table in paragraph (b) of this section lists assignable carrier frequencies or frequency bands.

(1) The single letter symbol appearing in the “Subpart” column indicates the subpart of this part which contains additional applicable regulations.

(2) The two or three letter symbol appearing in the “Class of Station” column indicates the class of station to which the frequency is assignable.

(b) Frequency table:

Frequency or frequency band	Subpart	Class of Station	Remarks
128.825-132.000 MHz	I	MA, FAE	Domestic VHF.
131.450 MHz	I	DLT.	
131.550 MHz	I	DLT.	
131.725 MHz	I	DLT.	
131.825 MHz	I	DLT.	
132.025-135.975 MHz	O, S	MA, FAC, FAW, GCO RCO RPC	25 kHz channel spacing.
136.000-136.400 MHz	O, S, I	MA, FAC, FAW, GCO, RCO, RPC, <u>FAE</u>	Air traffic control operations; 25 kHz channel spacing.
136.425 MHz	O, S, I	MA, FAC, FAW, GCO, RCO, RPC, <u>FAE</u>	Air traffic control operations.
136.450 MHz	O, S, I	MA, FAC, FAW, GCO, RCO, RPC, <u>FAE</u>	Air traffic control operations
136.475 MHz	O, S, I	MA, FAC, FAW, GCO, RCO, RPC, <u>FAE</u>	Air traffic control operations
136.500-136.875 MHz	I	MA, FAE	Domestic VHF; 25 kHz channel spacing.
136.850 MHz	I	DLT.	

136.900 MHz	I	MA, FAE, DLT	International and Domestic VHF.
136.925 MHz	I	MA, FAE, DLT	International and Domestic VHF.
136.950 MHz	I	MA, FAE, DLT	International and Domestic VHF.
136.975 MHz	I	MA, FAE, DLT	International and Domestic VHF.
<i>Frequencies above</i>			

§87.263 Frequencies.

- (a) *Domestic VHF service.* (1) Frequencies in the 128.8125-132.125 MHz and 136.000 - 137.000 MHz bands are available to serve domestic routes, except that the frequency 136.750 MHz is available only to aeronautical enroute stations located at least 288 kilometers (180 miles) from the Gulf of Mexico shoreline (outside the Gulf of Mexico region). The frequencies 136.900 MHz, 136.925 MHz, 136.950 MHz and 136.975 MHz are available to serve domestic and international routes. Frequency assignments may be based on either 8.33 kHz or 25 kHz spacing. Frequencies in the 136.000-137.000 MHz band are available to provide ATC and AOC for data link communication. When frequencies are shared for ATC and AOC for data link communications in 136.000–137.000 MHz the specific frequencies and traffic sharing methodology must be agreed upon with the FAA. Use of these frequencies must be compatible with existing operations and must be in accordance with pertinent international treaties and agreements.

Appendix B

Operation and Benefits of DataComm

Data Comm by the numbers



13 US Air Carriers
(Part 121)



46 Non-US Air Carriers
(Part 129)



1,000+ Business Aviation Operators
(Parts 91, 91K, 135)



62 Airports



58 Aircraft Types



Over 4,900 Equipped Aircraft

Data Comm Operational Metrics | 2

Data Comm benefits



In August 2018, CPDL DCL...



Saved 60,000+ minutes of radio time



Cleared 214,900+ flights



Saved 50,900+ minutes of airspace user time



Prevented 3,300+ readback errors

Since 2016, CPDLC DCL...



Saved 797,900+ minutes of radio time



Cleared 3,569,900+ flights



Saved 566,000+ minutes of airspace user time



Prevented 9.7M kgs of CO₂ Emissions

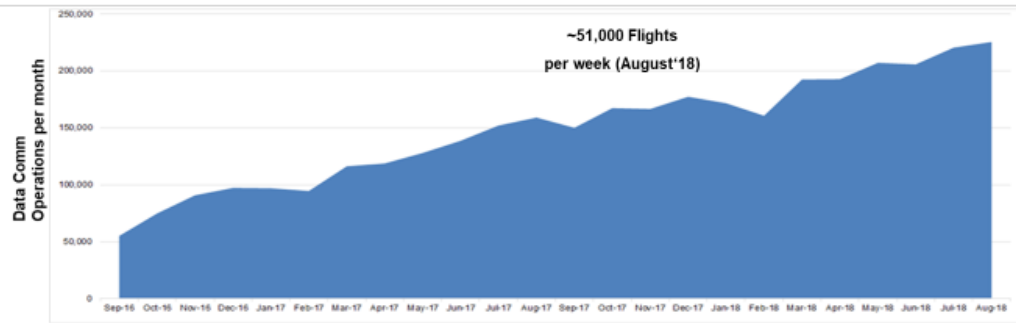


Served 500.1M passengers



Prevented 41,300+ readback errors

Data Comm Operational Metrics | 3



13 US Mainline Air Carriers



47 International Air Carriers



58 Aircraft Types



Business Jet Operators

